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TRANSPORTATION AND LAND USE SECTOR GHG REDUCTION POLICY OPTIONS

PREPARED FOR TWG CALL #5, NOVEMBER 9, 2005, 8:00-9:30 A.M.

Potential Emission Reductions *	Potential Cost or Cost Savings *
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO ₂ e) per year by 2020 (~1% of current AZ emissions)	High (H): \$50 per Metric Ton CO ₂ e (MTCO ₂ e) or above
Medium (M): From 0.1 to 1 MMT CO ₂ e per year by 2020	Medium (M): \$5-50/MTCO ₂ e
Low (L): Less than 0.1 MMT CO ₂ e per year by 2020	Low (L): Less than \$5/MTCO ₂ e
Uncertain (U): Not able to estimate at this time	Cost Savings: Options that save money, i.e., that have "negative costs."
	Uncertain (U): Not able to estimate at this time
<p>* "Potential" here connotes rough initial estimate based in part on experience in other states. Also, several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.</p>	

Definition of Priorities for Analysis:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low:** Low priority options will be analyzed last, time and resources permitting.

** Options marked with a double asterisk (**) indicate options that are at least partially "base case" policies, i.e., that have been or will be implemented at some level in Arizona. Options discussed by CCAG (9/29/05) are marked in yellow.

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.	PASSENGER VEHICLE GHG EMISSION RATES					
1.1	Vehicle Technology					
1.1.1	California GHG Emission Standards for Light-duty Vehicles	H	H	L	Opinions vary sharply on cost. Legal challenge pending.	Option reviewed by CCAG
1.1.2	California LEV-2 Emission Standards (option: w/ or w/out Advanced Technology Component)	TBD	L	L/M	May be attractive as SIP option due to reduction in conventional air pollution	
1.1.3	State R&D on Low-GHG Vehicle Technology (e.g., fuel cell)	L	L	?	Best coupled w/ federal dollars	
1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)	M	L	Cost Savings/L		
1.2	Vehicle Operation					
1.2.1	Lower and/or Enforce Speed Limits	M	L	?		
1.2.2	Vehicle Maintenance, Driver Training	M	L	?		
1.2.3	Transportation System Management	TBD	?	?		
1.2.4	<i>Deleted: Improved Traffic Flow</i>	TBD	?	?		Measure added by CCAG; TWG recommends deleting measure after determining that this measure is already accounted for in other measures including 1.2.3 and 4.2.3
1.3	Incentives & Disincentives					
1.3.1	<i>Deleted: Procurement of Efficient Fleet Vehicles [moved to new 3.4]</i>					

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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1.3.2	Feebates (state-specific or regional) <i>[Charge a fee on purchases of relatively high-emitting vehicles and give a rebate on the purchase of relatively low-emitting vehicles. Overall, fees/rebates are revenue neutral.]</i>	M	L/M	?	Considered in many states but not adopted.	
1.3.3	GHG-based registration fees	M	L	?		
1.3.4	Tax Credits for Fuel Efficient Vehicles	L	L	?	Federal tax code provides tax credits for alternative fuel vehicles	
1.3.5	Vehicle Scrappage	L	L	L/M	Pilots undertaken in several cities.	
1.3.6	<i>Deleted: Support for Federal Windfall Profit Tax on Oil Companies [tax income to be used for efficient vehicle incentives]</i>	TBD	?	?		Measure added by CCAG; TWG recommends deleting measure after determining that this measure since a Federal tax is not appropriate for consideration by the TWG or CCAG
2.	LAND USE AND LOCATION EFFICIENCY					
2.1	General <i>[Option: Treat these as options as a bundle]</i>					
2.1.1	Infill, Brownfield Re-development	H	H	?	Arizona Brownfields Cleanup Revolving Loan Fund, Prospective Purchaser Agreement	Bundle reviewed by CCAG
2.1.2	Transit-Oriented Development	H	H	?		Bundle reviewed by CCAG
2.1.3	Smart Growth Planning, Modeling, Tools	H	H	?	Growing Smarter Act [1998], Growing Smarter Plus Act [2000], Growing Smarter Oversight Council	Bundle reviewed by CCAG
2.1.4	Targeted Open Space Protection	H	H	?		Bundle reviewed by CCAG

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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3.	INCREASING LOW-GHG TRAVEL OPTIONS					
3.1	Increase Transportation Funding for Efficient Modes					
3.1.1	Make better use of CMAQ funds	H	L	L	AZ has 90% obligation rate.	
3.1.2	Expand Transit Infrastructure (rail, bus, BRT), Improve Transit Service, Promotion, and Marketing <i>[subsumes previous 9/21 matrix items 3.1.2, 3.1.3, 3.1.5]</i>	H	L	M/H	Light rail project approved for Phoenix-Mesa-Tempe [\$1.3 billion / 20 miles]. Target date of 2008. ADOT public transit grant funds are targeted at rural and special needs users.	
3.1.3	Bike and Pedestrian Infrastructure	H	L	?	ADOT Bike and Pedestrian Program www.azbikeped.org/	
3.1.4	HOV lanes	L	L	?		
3.1.5	"Fix-it-First" <i>[Earmark transportation funds toward the repair of existing transportation network before funding new transportation infrastructure]</i>	L	L/M	?		

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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3.1.6	Transit Prioritization (signal prioritization, HOV lanes)	L	L	?		
3.1.7	Telecommute and Live-Near-Your-Work	L	L	?	See esp. Pima County's Voluntary No-Drive Day. AZ does some encouragement telecommuting on bad air quality days.	
3.1.8	Car sharing / car pooling	L	L	?		
3.1.9	E-Commerce	L	L	?		
3.2	Incentives & Disincentives					
3.2.1	Employer-provided Commuter Incentives (transit passes, , vanpools, preferential parking) <i>[includes "Parking Cash Out" -- an employer that offers free parking also offers the parking subsidy in cash]</i>	L	?	?		
3.2.2	VMT Tax <i>[tax on miles driven]</i>	L	L/M	?		
3.2.3	Pay As You Drive Insurance <i>[part of a vehicle's insurance premium is determined by annual miles driven]</i>	L			Revenue neutral to drivers as a whole	
3.2.4	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)	L	L	?		
3.2.5	Location-Efficient Mortgages <i>[favorable mortgage terms reflecting lower cost-of-living in mixed-use communities near public transportation]</i>	M	L	?		
3.2.6	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)	M	?	?		
3.2.7	Parking Pricing or Supply Restrictions	L				
3.2.8	Transit Pricing Incentives	L				

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3.2.9	GHG Offset Requirements for Large Developments <i>[Require developer to offset GHG emissions attributable to a development]</i>	L				
3.2.10	Benefits for Low GHG Vehicles (e.g., preferential parking, use of HOV lanes)	M				
3.3	Fuel Measures					
3.3.1	Low-GHG Fuel Standard (e.g., minimum ethanol or biodiesel content)	M	H	L/M	TBD	Addressed by Federal Energy Bill
3.3.2	<i>Deleted: Low-GHG Fuel for State Fleets (e.g., ethanol, biodiesel, compressed natural gas (CNG), electric). Moved to 3.4.1.</i>	M				
3.3.3	Biofuel expansion (biodiesel, CNG, LPG, cellulosic ethanol)	M	M	L/M	Some CNG bus expansion in public transit, school districts, and at airports	Concerned with quality of biofuels and vehicle performance issues when using these fuels; reduces fuel economy
3.3.4	Expand Alternative Fuel Infrastructure Development (e.g. hydrogen, CNG)	M	L	n/a		Need to be sure that emissions from production of alt fuels don't exceed in-use emission reductions; may need R&D for future development of these fuels
3.4	Fleet Vehicles					
3.4.1	Low-GHG Fuel for State Fleets (e.g., ethanol, biodiesel, compressed natural gas (CNG), electric)	M	L	L/M		Already in place in some areas of State
3.4.2	Promote Low-GHG Fuel for Private Fleets	M	L	L/M		

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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4.	FREIGHT					
4.1	Vehicle Technology					
4.1.1	Vehicle Technology Improvements (e.g., engines, aerodynamics)	L	L	?	New EPA emission standards for heavy-duty engines take effect in 2007.	
4.1.2	Voluntary diesel retrofit program	L	L	L/M	See EPA National Clean Diesel Campaign	Pre-88 diesel vehicles are prohibited in nonattainment areas in Arizona;
4.1.3	Low-sulfur diesel	L	L	H	New EPA fuel standards for low-sulfur diesel take effect in 2006.	
4.1.4	Black carbon control technologies (e.g., use of particulate traps, other complementary technologies)	L	?	M	Large co-benefits in PM reduction	Some existing programs in place in Arizona, encountered operational problems with retrofits
4.1.5	Obtain EPA Funds for State Vehicle Retrofits <i>[encourage State to pursue EPA grants for retrofits on State vehicles]</i>	M	?	?		Option added 10/26. Work at obtaining experience in State with diesel retrofits and find solutions to common operational problems. Note importance of fuel/technology interplay.
4.2	Vehicle Operation [Option: Treat these as options as a bundle]					
4.2.1	Freight Logistics Improvements/GIS	M				
4.2.2	Enforce Speed Limits	M				
4.2.3	Improve Traffic Flow	M				Encourage use of Phoenix bypass
4.2.4	Increased Size & Weight of Trucks	L				State doesn't currently have authority to regulate this. However, if a regional or national movement to change this takes place, AZ should reconsider this as an option.

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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4.2.5	Pre-clearance at Scale Houses	M				
4.2.6	Promote Idle Reduction Technologies <i>[includes truck stop electrification]</i>	M				
4.2.7	Enforce Anti-Idling	M				
4.2.8	Intermodal Freight Initiatives <i>[increase rail use through better intermodal connections]</i>	N/A			See e.g. EPA SmartWay program	
4.3	Incentives & Disincentives					
4.3.1	<i>Deleted: Procurement of Fuel Efficient Fleet Vehicles (public, private or other) [combined w/ 3.4.2 above]</i>	Red letters below suggested by CCS				
4.3.2	Incentives to Retire or Improve Older Less Efficient Vehicles**	L				Existing prohibition on pre-1988 diesel engines in Arizona nonattainment areas.
4.3.3	Maintenance and Driver Training <i>[to improve fuel efficiency]</i>	M				
4.3.4	Increased Truck Tolls or Highway User Fees	L				
4.4	Intercity Travel: Aviation, High Speed Rail, Bus					
4.4.1	<i>Deleted: High-speed Rail [combined with 3.1.5]</i>					
4.4.2	Integrated Aviation, Rail, Bus Networks <i>[combine with 3.1.2. in multi-modal package]</i>	n/a				
4.4.3	Aircraft emissions <i>[improved operation of aircraft and runway management]</i>	L				
4.4.4	Use of Alternate Fuels in Airport Ground Equipment	L				

CCS POLICY MATRIX, TRANSPORTATION AND LAND USE TWG, 11/09/05

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4.5	Off-Road Vehicles (construction equipment, out-board motors, ATVs, etc)					
4.5.1	Incentives for Purchase of Efficient Vehicles/Equipment	L				
4.5.2	Improved Operations, Operator Training	L				
4.5.3	Maintenance Improvements	L				
4.5.4	Increased Use of Alternative Fuels or Low Sulfur Diesel	L				